



Space News Roundup

Vol. 30

August 2, 1991

No. 30

Atlantis, crew will try to launch again today

The STS-43 launch attempt was scrubbed Thursday because of weather, but *Atlantis* and its crew of five will try again today.

Launch Director Bob Sieck, faced with unfavorable crosswinds at Kennedy Space Center's Shuttle Landing Facility and the possibility of lightning in the area of Launch Pad 39A, told the crew and launch team of the postponement at 11:26 a.m. CDT.

"Based on the dynamic condition of the weather and the fact that we're expecting it to deteriorate as opposed to improve, we want to go ahead and scrub for today and go into recycle so we'll have a chance at the

beginning of the window tomorrow," Sieck said.

The crew and launch team immediately began 24-hour scrub recycle procedures that will put the vehicle and ground support equipment in position to launch at 11:02 a.m. CDT today, one minute later than the opening of Thursday's launch window.

Before weather became the determining factor Thursday, the launch team was forced to repressurize the crew cabin when a vent valve sensor showed that the valve was not config-



ured to maintain the proper pressure in the crew cabin during ascent. Launch technicians determined the problem was in the sensor, not the valve, and the countdown was resumed.

STS-43 will be the fourth space shuttle mission of the year and the forty-second overall for the program.

Thursday's delay followed a delay of about a week to replace a malfunctioning main engine controller.

The crew, led by Commander John Blaha,

will deploy its primary payload — a fourth Tracking and Data Relay Satellite — about 6 hours into the mission. Blaha, Pilot Mike Baker and Mission Specialists Jim Adamson, David Low and Shannon Lucid are scheduled to perform a variety of life science and materials science experiments during the remainder of the nine-day mission. Landing is scheduled for about 7:19 a.m. CDT Aug. 11 at KSC.

The controller changeout went smoothly as workers gained access to the orbiter's aft compartment following discovery of the balky controller during propellant loading for the July 23

Please see **ATLANTIS**, Page 4

Space telescope managers eyeing gyro problems

Hubble Space Telescope managers have asked space shuttle officials to help evaluate alternative servicing strategies for the orbiting observatory following the discovery of new gyroscope problems.

Hubble is functioning normally and the science timeline is proceeding as planned, but a new anomaly was observed last Friday in one of the six gyroscopes that help maneuver and point the telescope.

Three gyros are needed to keep the telescope in the proper attitude; four are now operating, but one of those is drawing higher-than-normal current for its control electronics.

Although there has been discussion in the science community about the possibility of an early mission to service the telescope, no specific request for an earlier servicing mission has been made. NASA is not yet planning a mission any earlier than 1993, when astronauts are scheduled repair its solar panels and install equipment that will correct for the spherical aberration that is impairing Hubble's focusing abilities.

"Right now, we're not working any accelerated mission in the space shuttle program for Hubble," Shuttle Program Director Bob Crippen said Wednesday. If any such mission should become a requirement, he said, "it would probably still not be much earlier than what we're currently working."

In December 1990 and July 1991, Hubble also experienced failures in gyro numbers 6 and 4. Gyro number 5, which was reported Friday to be drawing more current than normal, is stable and continues to operate satisfactorily. The most recent problem appears different from the previous two failures.

Please see **HUBBLE**, Page 4



JSC Photo by Mark Sowa

LEAFY LESSON — Dr. Dan Barta, a JSC plant physiologist, and Maria Ramirez, a Summer High School Apprentice Research Program student from Clear Creek High School, inspect the second lettuce harvest in Bldg. 7A's test-bed plant growth chamber. Both are studying the growth of lettuce for regenerative life support systems. Ramirez is one of 17 SHARP students who will finish their summer studies at JSC next week.

U.S., Soviets widen space cooperation

The U.S. and the Soviet Union agreed Wednesday to expand civil space cooperation by flying a U.S. astronaut on a long-duration Soviet space station Mir mission and a Soviet cosmonaut on a U.S. space shuttle mission.

The two countries also will increase cooperation in monitoring the global environment from space and initiate annual consultations on civil space issues and cooperative activities. The agreement was reached by Presidents Bush and Gorbachev during the July 30-31 Summit in Moscow.

These initiatives were developed for the U.S. side under the guidance of the National Space Council, chaired by Vice President Dan Quayle.

The purpose of the exchange of flights is to conduct life sciences research of mutual interest. It would advance current efforts to standardize in-flight medical procedures which would improve comparability of data taken by each side.

The exchange would involve training of the crew members at appropriate U.S. and Soviet facilities, exchange of medical equipment for flight on the space missions and establishment of a telecommunications link between appropriate facilities of the two sides for use during the missions.

A new joint working group on manned space flight will be established as an annex to the 1987 U.S./U.S.S.R. space science agreement to implement

Please see **AGREEMENT**, Page 4

Symposium explores space station 'Beyond the Baseline'

By Kyle Herring

A three-day symposium, "Space Station Evolution: Beyond the Baseline," begins Tuesday at the South Shore Harbour conference center with a keynote address by William Lenoir, associate administrator for space flight.

Structured as a forum, the symposium is designed to discuss the current status and future plans for Space Station *Freedom* as well as evolution

and advanced systems.

The agenda will also include a review of future utilization for scientific research, exploration support and technology development as well as long-range plans of the international partners, commercial opportunities and evolution strategies.

The first half day of the symposium, with opening remarks from JSC Director Aaron Cohen, will concentrate on the current program status

including the international partners. In addition to Lenoir and Cohen, first day speakers are scheduled to include John Cox of the Space Station *Freedom* Program and officials from the European Space Agency's Columbus Program, Japan's National Space Development Agency, and the Canadian Space Agency.

The remaining days will cover future space programs and evolution

of Space Station *Freedom*, with sessions on "Strategies for Evolution," "Evolution Concepts and Operations," "Space Station Data Systems," "Distributed Systems," "Engineering Tools and Techniques" and "Tele-robotic Systems."

Presentations during the symposium will center on applications to flight, ground, information and telerobotic systems. These applications

Please see **SYMPOSIUM**, Page 4

Observatory detects brightest gamma-ray source

An instrument aboard NASA's Gamma Ray Observatory has detected "the most distant and by far, the most luminous gamma-ray source ever seen."

Principal Investigator Dr. Carl Fichtel, leader of Goddard Space Flight Center's Energetic Gamma Ray Experiment Telescope team, reported its discovery in a telegram to the International Astronomical Union in Cambridge, Mass.

The team identified the source of intense localized gamma radiation, detected between June 15 and 28, as the variable Quasar 3C279, seen in the constellation Virgo, approximately 7 billion light years from Earth.

Fichtel said the quasar is emitting a large flux of gamma rays, each

gamma ray photon with an energy greater than 100 million electron volts. In contrast, a visible light photon has an energy of only a few electron volts, and an x-ray photon has an energy of a thousand electron volts. The luminosity or total energy emitted by this quasar is approximately 10 million times that of the total emission of the Milky Way galaxy, according to the Goddard scientist.

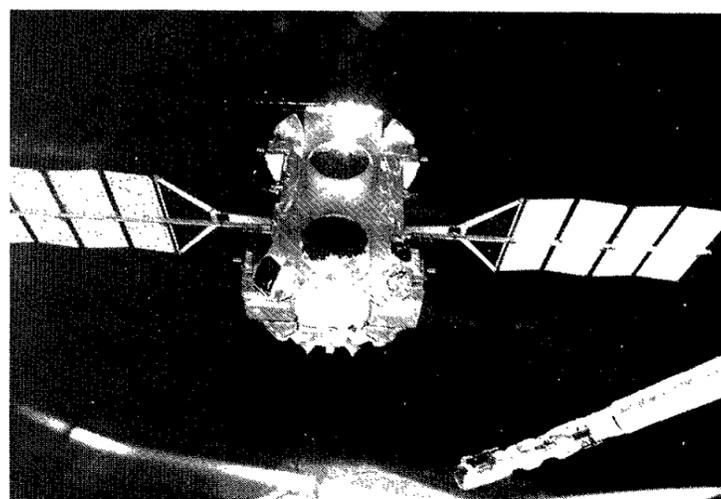
"Quasar 3C279 is a variable quasar, meaning that its intensity changes over time," Fichtel explained. At its present intensity, this source should have been visible to two previous gamma ray missions — NASA's Small Astronomy Satellite and the European Celestial Observation Satellite — but neither

reported a detection.

"Between 1982 and 1991, this quasar has gone from being undetectable to being one of the few brightest objects in the gamma ray sky," Fichtel said. "Because of its large distance, this observation is dramatic confirmation of the dynamic nature of the gamma ray sky and an example of the most energetic processes in nature."

GRO, the second of NASA's Great Observatories, was launched April 5, 1991, aboard the Space Shuttle *Atlantis* to study high-energy radiation from deep space.

EGRET is the largest instrument ever assembled in-house by Goddard. The 7.3-by-5.4-foot, 4,001 pound EGRET is one of four GRO instruments.



NASA Photo

The Gamma Ray Observatory is deployed from the Space Shuttle *Atlantis* after Mission Specialists Jerry Ross and Jay Apt manually deployed its high-gain antenna during a space walk.

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. weekdays.

General Cinema (valid for one year): \$4.
 AMC Theater (valid until May 1992): \$3.75.
 Loews Theater (valid for one year): \$4.
 AstroWorld (valid 1991 season): season, \$44.94; child less than 4-feet, \$10.12; one day, \$15.85; WaterWorld, \$8.15.
 SeaWorld of Texas (valid 1991 season): child (3-11), \$12.25; adults, \$17.25.
 Six Flags (special price tickets available from Aug. 5-9, tickets good any summer day): \$13.95.
 NASA Ski Week (Jan. 4-11, Big Sky Montana Resort, includes airfare, shuttle transfers, 6 day lift pass, 7 nights lodging): 2/Rm.-\$744/person; 3/Rm.-\$685/person; 4/Rm.-\$656/person; \$100 deposit due by Aug. 15.
 Ringling Bros., Barnum and Baily Circus (noon, Aug. 3, Summit): \$8.50.

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Gilruth Center News

Sign up policy—All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

Defensive driving—Course is offered from 8 a.m.-5 p.m., Oct. 12 or Nov. 16. Cost is \$15.

Aerobic dance—High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$24.

Exercise class—Low-impact class meets from 5:15-6:15 p.m. Monday and Wednesday nights. Cost is \$24.

Weight safety—Required course for employees wishing to use the Gilruth weight room. The next class will be from 8-9:30 p.m. Aug. 22. Cost is \$5.

Aikido—Martial arts class meets Tuesdays for six weeks beginning Aug. 6. Cost is \$30 per person.

Ballroom dancing—Beginning class will meet from 7-8:15 p.m. Thursdays, starting Aug. 1; beginning/intermediate class meets from 8:15-9:30 p.m. Thursdays beginning Aug. 1. Cost of eight-week course is \$60 per couple.

Tennis—Beginning tennis class meets Mondays for six weeks starting Aug. 12. Advanced beginners class meets Wednesdays beginning Aug. 14. Cost is \$32.

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Technical Library News

The following selections are now available in JSC's Technical Library, Bldg 45, Rm. 100.

Viking Lander Imaging Investigation: A Picture Catalog of Primary Mission Experiment Data Record. Robert B. Tucker; 1978. QB 641 .T82 1978.

Carbon in the Galaxy: Studies from Earth and Space. NASA, 1990. QB790 .C37 1990.

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Swap Shop

Property

Lease: Pearland, Riverwalk subdivision, 3-2-2. 1 yr min lease, \$700 dep, \$700/mo. 482-4365.
 Sale: LC, 3-2-2, no MUD taxes, assum, no approval, never flooded, \$62K. 538-2299.
 Sale: Friendswood, Wedgewood Village, two adjoining residential lots, 1/3 acre ea, owner fin w/ 10% down, \$12.5K/ea. 482-5226.

Lease: Lake Travis cabin, central A/C, fully equipped, accom 8, wkly/dly, \$425/\$85. 474-4922.

Sale: Nassau Bay, 3-2-2, FPL, den, deck, 2200 sq ft, \$115K. Phil, x37892 or 333-9518.

Lease: University Green patio home, 3-2-2, 1700 sq ft, lg backyard, brick wall, has American Home Shield home warranty, \$950/mo. 333-7248 or 480-9544.

Sale/Lease: Dickinson 3-2-2, lg LR, lg BR, fenced yard, assumable, available August. 538-1217.

Sale/Trade: Country club estate lot, 60 ft x 110 ft, 18 hole golf course, near Trinity on Lake Livingston, till avail, trade for lot of equal value in LC, Alvin, or Friendswood area, \$10K terms. 554-6841.

Lease: El Lago, 4-3-2, formal LR, family rm, fenced yard, avail Aug 1, \$900/mo plus deposit. 353-2893.

Sale: Camino South, 3-2-2A, corner, lg den w/FPL in brick accent wall, kitchen has island, ceramic tile floor, oak cabinets, Saltillo tile patio surrounded and covered by trellises, \$74K. x33335 or 326-2582.

Lease: Webster/Ellington, 2-1-condo, \$435/mo. Dave, x38156 or Eric, x38420.

Rent: Galveston condo, Seawall Blvd & 61st Street, furnished, sleeps 3, cable TV, swimming pools, wkly/wkndly rates. Magdi Yassa, x38470 or 486-0786.

Sale: 3.2 acres, Port Au Prince, 50 yds off Bastrop Bayou, boat ramp access. 283-5398 or 941-1512.

Lease: Nassau Bay, 4-2-5-2, fresh lake waterfront, pool, FPL, 3000 sq ft, avail Oct 1. Phil, x37892 or 333-9518.

Sale: Nassau Bay, 3-2-5-2, FPL, spa, appt only, \$72K. 852-2436.

Sale: CLC Camino South, 4-2-2a, new carpet, new inside paint, \$79.9K. 480-1374.

Sale: Lakeside condo at The Landing, 2-1, 25 ft boat slip, \$42K. Carol, 244-9641 or 667-7023.

Sale: Bay Glen, 3-2-5-2, 2 story, formal LR/DR, family rm, double glass storm windows, assum, \$119K. Ho, x32941 or 488-8632.

Rent: Med Center, 2 story condo, 2-1.5-CP, W/D, FPL, cable, lg kitchen w/breakfast, walk-in closets, \$675/mo. Charlie, 333-7804 or 799-9101.

Cars & Trucks

'89 Ford Escort, 4 dr, 29K mi, loaded, transferable extended warranty, burgundy interior/exterior, \$5.5K. Sonya Yoder, 488-1680.

23 ft Starcraft travel trailer, 2 30# LP tanks, A/C, tub/shower, gas or elec refrig, 4 burner gas stove/oven, \$3.1K. JoAnn, 943-1694.

'84 Camaro, pwr, A/C, IRC access, metallic gray, 65K mi, \$3.1K. Rogers, x38851 or 944-7042.

'88 Ford Mustang LX conv, leather int, all pwr, tilt steering, cruise control, \$8.6K. Chad, x35786 or 486-6125.

'87 Omni, ex cond, \$2150. 280-2423 or 326-4134.

'65 Ford Mustang, 2 dr, auto, 2 new tires, good eng/trans, needs repairs, sell as is, BO. 733-0248.

'87 Nissan Stanza GXE, auto, pwr steering/windows/dr locks, A/C, \$4.5K. Jeff, 333-7062 or 482-8585.

'89 Jeep Wrangler Islander, red, 6-cyl, 5 spd, PS, P/B, A/C, 45K mi, ex cond, \$10,950 OBO. Rob, x30762 or 992-4507.

'86 Toyota 4 Runner 4x4, ex cond, 4-cyl FI, 5 spd, 73K mi, \$7.3K OBO. Bob, 996-0393.

'80 Toyota Celica GT, ex cond, Pioneer stereo, good cond, sun roof, tinted windows, 5 spd, lots of new parts, \$2.5K. x33418 or 334-4233.

'85 Chrysler Laser, 5 spd, turbo engine, A/C, elec mirrors, tilt, cruise, AM/FM/cass, good cond, \$2.6K. 333-6795 or 925-3210.

'85 Ford Crown Victoria, 4 dr, P/S, P/B, A/T, A/C, AM/FM/stereo, \$3.5K. 282-4057 or 332-2089.

'77 Rockwood Pop-up camper, good cond, new Coleman A/C, new tires, indoor/outdoor kitchen, ice

box, 4-burner stove, sink, sleeps 6-7, \$1.9K. Betty, x37242 or 332-3724.

'77 Ford E150 Window Van, 351W engine, auto, A/C, good cond, \$1.7K. Bauch, x31309 or 333-3382.

'85 Dodge PU, D150 longbed, good cond. Paul, x37591.

'86 F150 Supercab with full sz bed, 351 H O V-8, XL package, 69K mi, dual tanks, ex cond, \$7.2K OBO. 339-1337.

'81 Honda 750 Custom, ex cond, new tires, battery, 14K mi, \$950. Ed, x34411 or 482-7461.

'85 Toyota truck longbed, 5 spd, A/C, AM/FM/cass, \$2.8K. 585-8904.

'74 Olds Cutless, ex mechanical, some body rust, 2 dr, V-8, \$750. x37558 or 554-6166.

'87 Ford Van, TRA-TECH conversion, 27K mi, ex cond, 302-V-8, auto o/drive, 4 capt chairs, dual air. 554-6841.

'77 Cadillac Sedan DeVille, metallic dk green, perfect vinyl roof, 200 watt Clarion stereo/cass/equalizer, all power, \$1550. x33623 or 332-8639.

'89 Honda Prelude si, sky blue, 28K mi, ex cond, alarm wheels, alarm, \$12.5K. 480-9125.

'89 Honda Civic LX, 4 dr, P/W, P/D, P/B, P/S, AM/FM/cass, A/C, new tires, ex cond, \$8K. Jay, x35814 or 992-3149.

Cycles

'86 Honda VFR 700, new tires, and header, 8K mi, wht, \$2.9K OBO; '81 Suzuki RM 125, rare ready, ex cond, \$550 OBO. Andy, 333-6671 or 332-9105.

Track Bike, 53cm Sommer, 24" x 24 spoke tubular Sun rims, Suntour Superbe Pro gruppo w/extra parts, ex cond, was \$1.4K, now \$800. Doug, 480-3011.

'90 Trek 750 Multi-track 19 in man's bicycle, ex cond, \$275 OBO. Cynthia, x32590 or 790-1146.

'84 Yamaha 1000 cc Varago, 10.6K mi, ex cond, \$1.8K. Richard, x33858 or 534-3652.

Ladies bike, \$75; 21 in Vista 3-sp, ex cond, 283-5465 or 332-1725.

Exercise bike, low mi, \$15. Jeff, 333-7062 or 482-8585.

27 in Bianchi, 10 spd tour bike, red, was \$500, now \$150 OBO. Randy, 333-6568 or 480-5997.

'87 Harley-Davidson, Sportster 883, ex cond, \$3.2K. Greg, 282-3385 or 286-1309.

'82 Honda FT500, good cond, new tires, helmet, \$650. Terry, 282-3683 or 474-5639.

'81 Honda XL 185 cc dirt bike, 4 cyl engine, knob-by tires, good cond, \$350. Mark, 538-3001.

Boats & Planes

Aircraft propeller, Senenish 74DM6-0-58, overhauled, yellow tag, fits some Beech, Piper, PA-18, 22, 28 series aircraft, \$900. 538-2299.

Prindle 16 catamaran w/galv trlr, beach tires, incl life jackets, trapeze, and extra gear, good cond, \$1.3K. x30620 or 488-6267.

'79 Pearson 28 ft w/4 sails, shore pwr, extensive invt, ex cond, \$9.5K. 479-4963.

'81 21 ft Sloopcraft Jet Boat, 425 Olds w/Berkley Jet Drive, \$1.5K OBO. Bob, 996-0393.

16 ft Hobie Catamaran Classic w/yellow hulls, multicolor sails, hvy duty trlr, \$1650. Ream, x32795 or 326-5746.

Sailboat b100-14 w/sail and trlr, \$995. R. Hoover, x31360 or 996-7716.

25 ft McGregor sailboat, AM/FM/cass, marine VHF, depth, head compass and trim gauges, 6hp-Mariner, custom rigging, trlr, \$6950; Hanimax MM1 35mm underwater camera, motor drive, flash, close-up lens, \$200. Kevin Walters, 486-6411 or 532-2181.

Surfboards, 5 ft 4 in Fry kneebord, \$100; Southcoast 6 ft 10 in Thryster w/bab, \$200; Post Modern 8 ft 9 in Tri-noserider, \$250; 10 ft Phil, \$150. 554-2320.

Boat slip on Clear Lake w/roof and motorized boat hoist, \$125/mo. 474-4922.

Audiovisual & Computers

AppleII+ w/monochrome monitor and two HD, SW, \$200. Brad, 282-3570.

QUME Sprint 9/35 serial printer, incl keypad, uses 96-char "daisy" printwheel, ex cond, w/manual, \$75

JSC

Today

Cafeteria menu — Special: fried chicken. Entrees: fried shrimp, baked fish, beef stroganoff. Soup: seafood gumbo. Vegetables: okra and tomatoes, buttered broccoli, carrots in cream sauce.

Monday

Cafeteria menu — Special: meat sauce and spaghetti. Entrees: franks and sauerkraut, sweet and sour pork chop with fried rice, potato baked chicken. Soup: cream of potato. Vegetables: French beans, buttered squash, lima beans.

Tuesday

Space station symposium — NASA Headquarters' Office of Space Station will host a conference on "Space Station Evolution: Beyond the Baseline," beginning at 8 a.m. Aug. 6-8 at the South Shore Harbour Resort and Conference Center. Speakers will include William Lenoir, associate administrator for space flight; Richard Kohrs, director of Space Station Freedom; and the heads of the European, Japanese and Canadian space station programs. For more information, call Carla Armstrong, x39071.

Cafeteria menu — Special: smothered steak with dressing. Entrees: beef steak, liver and onions, shrimp Creole. Soup: navy bean. Vegetables: buttered corn, rice, cabbage, peas.

Wednesday

Cafeteria menu — Special: salmon croquette. Entrees: roast beef, baked perch, chicken pan pie. Soup: seafood gumbo. Vegetables: mustard greens, Italian green beans, sliced beets.

Thursday

NPMA dinner—The JSC National

Dates & Data

Property Management Association will meet at 5 p.m. Aug. 8, at the Gilruth Center. Gloria Delgado, area manager for Internal Affairs with Southwestern Bell, will speak. For more information contact Sandra Pierce 282-4151.

Cafeteria menu — Special: stuffed cabbage. Entrees: beef tacos, ham and lima beans. Soup: beef and barley. Vegetables: ranch beans, Brussels sprouts, cream style corn.

Aug. 9

Cafeteria menu — Special: Salisbury steak. Entrees: fried shrimp, deviled crabs, ham steak. Soup: seafood gumbo. Vegetables: buttered carrots, green beans, June peas.

Aug. 14

Threshold meeting — The Threshold Group will hold a general assembly meeting at 4 p.m. Aug. 14 in Bldg. 30 auditorium. Updates on Threshold activities will be presented. Nominations for officer candidates will be open until Aug. 16. For more information call James Sturm, x33085.

Aug. 16

Asian Pacific panel — The Asian Pacific American Program will host a panel discussion and cultural program at 1:30 p.m. Aug. 16 in Teague Auditorium. The panel, led by JSC Human Resources Director Harvey Hartman, will discuss "Achieving Excellence in Space Activities: The Human Resources Perspectives." The cultural program will include ethnic dances, music and traditional bridal costumes. Call Pam Adams at x33761 for more information.

Aug. 19

Contract pricing seminar — The National Contract Management Asso-

ciation and the University of Houston-Clear Lake are co-sponsoring a seminar on "Estimating Cost and Pricing of Government Contracts" at 7:45 a.m. Aug. 19-21 at the UHCL Bayou Bldg., Rm. 2-532. Cost is \$150 per person, which includes course materials. For registration, call 283-3120 or 283-3122. For more information contact Jean Stell 283-3120.

Aug. 22

SCS meeting — The Society for Computer Simulation will meet at 11:45 a.m. Aug. 22 at the Lockheed Plaza 3 Bldg., first floor PIC Rm. JSC's Liz Bains will speak on the "Simulation System Branch." No reservations required. Lunch will be available. For more information, contact Wade Webster, 244-4306, or Robin Kirkham, 333-7345.

Aug. 27

BAPCO meeting — The Bay Area PC Organization (BAPCO) will meet at 7:30 p.m., Aug. 27, at the League City Bank and Trust, 303 E. Main, League City. Contact Earl Rubenstein, x34807, or Tom Kelly, 996-5019, for information.

"Beyond Excellence" workshops — Dr. B. L. Sommer, an authorized presenter of Tom Peter's lecture series, will host two "Beyond Excellence" Aug. 27 at the Gilruth Center. Workshop 1, "Leadership Through Creativity and Innovation," will be from 8:30-11:30 a.m.. Workshop 2, "Lead, Follow, or Step Aside — The Art of Negotiation" will be from 1-4 p.m. Aug. 27 at the Gilruth Center ballroom. Civil service employees can receive training credit for attending the workshops. Registration will be handled the day of the workshop at the Gilruth Center.

OBO. Tom, x37696 or 482-1558.

Sonyo stereo sys, AM/FM radio, dual cass, phonograph, 2 bkcase speakers, \$50. x38163 or 486-0830.

Car radio, AM/FM, out of '88 Tempo, \$20; Lloyds record player, two speaker, AM/FM radio, \$50. 946-7587.

SW, educational, word scramble, Play & Learn, age 7-11, for IBM clones, customize your own words, full pkg w/manual \$25. Youm, 283-4813.

Apple 3/Lisa no drives, 2 monitors, \$15/ea. 282-4262 or 333-2166.

Musical Instruments

King trombone, ex cond, \$125. x31252 or 482-2425.

Korg DW8000 digital polyphonic synthesizer w/Yamaha 256 voice, MIDI model, \$450; Crate 20w bass amp, ex cond, \$50. Doug, 480-3011.

Clarinet \$100. 488-6917.

Yamaha studio piano, blk lacquer finish, \$3.3K. 488-6232 or 929-7283.

Pets and Livestock

Free kittens blk w/whit paws. 488-6917.

Free female spayed, Shepard/Collie. 325-5155.

Golden retriever. x35896 or 488-7982.

Himalayan/Persian kittens CFA reg, male and female, Sealpoints, one black male, grand champion lines, also cream Persian stud, \$250. Kristy, x33418 or 286-0146.

Parrots, 1 pair Bonded Doubleyellow Head, male, 2 yrs, \$/S Hen 1 yr, \$1.2K; 2 S/S Yellow Nape males, 6-7 yrs, \$650; 1 baby Doubleyellow Head, 5 wks, \$500. Wade, (512) 924-8708 or Billie (512) 923-0312.

For sale mini lop rabbits, pet and show quality, Gallo, 554-6200.

Free 1.5 yr Rotty/Lab. 992-2560.

Free puppies, Shepherd/Lab mix, 2 mos, golden or blk, male or female. Brenda, x38183 or 996-9526.

AKC Collies champion sire and dame, 1 tri-color rough female, 1 sable smooth male, 12 mo, \$175/ea or \$300 both, neg. 484-7583.

Household

King sz Bassett four poster pine bed, 4 yr old boxspring, mattress, and comforter incl, \$400 OBO. Vanessa or J. C. 282-4563 or 943-8443.

King bed, \$75; sofa bed, \$400; stereo center, \$300; dinette set, \$300; microwave, \$100; cart, \$40; coffee and two end tables, \$100; BBQ, \$25. 333-5179.

Norge, 21 cu ft w/ht refrig w/ice maker, 2 mos, was \$900, now \$600 OBO; washer and elec dryer, ex cond, \$250. 282-6883 or 943-1694.

Queen Anne style DR table, 42 in x 60 in w/12 in insert, and 4 matching chairs, \$550 OBO. Cynthia, x32590 or 790-1146.

Hard rock maple 48 in DR table, 2 leafs, 6 chairs, \$400. Richard, x33858 or 534-3652.

Designer bar, wine rack, two locking cabinets, marble top, mirrors in front, dk mahogany, two stools, \$500. 532-2158.

DR suite pecan finish, 6 chairs, table w/2 leafs, china cabinet, 72 in x 52 in x 14 in, glass front, \$350. x33173 or 482-1348.

Early American double dresser, hutch and night stand, \$250; wood and brass daybed w/trundle, \$250. David, x38947.

Somma II Queen sz water bed, ex cond, \$400. Linda, x32891 or 554-4228.

Formal DR set, 8 piece, buffet, 2 captains chairs, red velvet upholstery trlm, \$695. 480-5673 or 554-2911.

Dining table w/leaf, 41 in x 59 in extended, \$45; pair Bentwood antique chairs, ex cond, \$50; hand-woven Peruvian fur wall hanging w/pictures woven in hanging, 4.5 ft x 5.5 ft; ladies antique small sewing rocker rope seat, \$45; IBM elec typewriter \$75; typing table w/drw and drop leaf, \$20; pair of long antique ship benches, folding legs, \$50. 488-5564.

BR suite, antique green, full sz bed, mirrored dresser, 5 drwr chest, 2 night stands, \$700; G.E. dishwasher, w/pot scrubber, almond, needs adj, \$70.

Magdi Yassa, x38470 or 486-0788.

Solid maple 9 drwr chest w/mirror, ex cond, \$350. 286-8431 or 488-6758.

Extension table 84 in length, \$125; surfbed, 6 ft, \$50; 2 drwr, file cabinet, \$10; orange beanbag chairs, \$20; headbd, full sz, \$10. 333-9733.

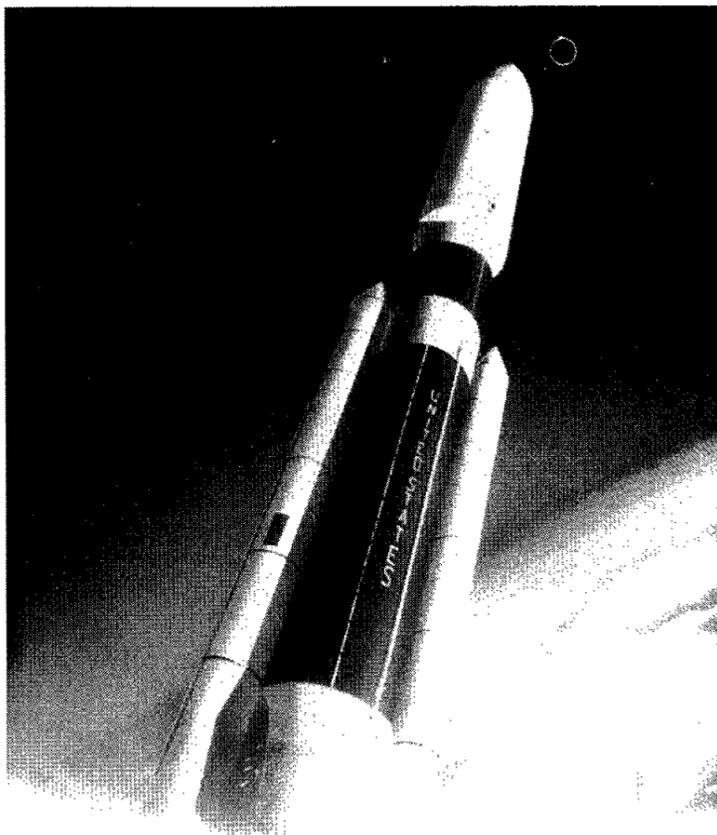
Dining table w/leaf, 4 chairs, \$50; entertainment center, w/glass drs, \$50; complete 5 piece pine bedroom set, \$800. 282-4736 or 286-8524.

Sectional sofa, 1 yr old, neutral color, seats 7, ex cond, \$450. Ward, 282-2639 or 280-0735.

Washer and dryer, good cond. David, 282-3363 or 996-8973.

Traditional DR set, walnut table and 6 chairs, light-eth china cabinet, \$300. 480-5027.</

National Space Launch Strategy



Milestones

- ✓ Dec. 1, 1991: NASA, DOD and DOE launch technology plan due.
- ✓ Fiscal 1993: Final decisions on new launch system program schedule, including date of first flight, are due.
- ✓ 1999: First flight of new launch system.

Vice president discusses policy

[Editor's note: Vice President Dan Quayle unveiled the U.S.'s new National Space Launch Strategy in an address Jan. 24, 1991 at Vandenberg Air Force Base, Calif. The following is an edited transcript of the address.]

We can't predict every challenge facing us 10, 30, 50 years down the road. But we can equip ourselves and our children to deal with those challenges: by providing the infrastructure that's needed to build and to prosper. In the 20th Century, our pathways to progress and development have been the momentous highway and dam projects. In the 21st century, our next great pathway will be space transportation.

And consider where that pathway could take us. Consider the benefits it may bring us:

- Research and manufacturing in space can help us cure dreaded diseases and extend life.
- Space travel can bring about whole new industries — in areas like communications, electronics, and energy — improving our standards of living, generating jobs, and making us more competitive.
- It can also open new avenues of cooperation with other countries — including the Soviet Union — allowing us to work together on environmental monitoring and life sciences research.

And let's not forget another reason for our space program. We are a pioneering nation. You can trace our entire history through the stories of those who led lives of exploration and discovery. From Lewis and Clark to the riders on the westward trails; from Thomas Edison to Henry Ford; from the Wright brothers to the astronauts. It is our destiny to push back the frontiers of geography and knowledge. Americans will always be the world's great pioneers.

To continue to lead, to create the infrastructure that's needed, we have to go beyond where are today. Let's face it: America's launch capabilities are aging. You know this well. The shuttle, for all its marvelous capability, was designed in the early 1970s. The expendable rockets are based on even older technologies. It's not that we can't get critical missions into space; we can, and we have. But we can do more. It is time for a new phase in space launch.

I am here to announce that as of today, we have entered that new phase. President Bush has approved a new National Space Launch Strategy — a long-range plan to meet America's launch needs well into the next century.

How do we get there? We'll begin by developing a new national launch system — a new family of launch vehicles — within a decade — to take advantage of current technologies that are less costly and more reliable. We'll also pursue an energetic space launch technology program to prepare for needs that arise down the road. This effort, involving NASA and the Departments of Energy and Defense, will include both system components and new launch system concepts — like the National Aerospace Plane — that could bring breathtaking improvements in the years ahead.

The new National Launch Strategy is not a "buy everything" plan. It's one that will meet real needs, both for NASA and the Department of Defense. And it's one that will lead to a new commercial launch vehicle as good or better than those of our foreign competitors.

We also have to remember that in the next several years, decisions must be made on the design of a whole new generation of satellites. If we don't move forward with a new system now, these missions will have to be designed for

launch on vehicles we already have. If we were to let this happen, America would be locked into continued reliance on our current vehicles, and their 20- to 30-year-old technology, for another generation. This is unacceptable.

Of course, investing in a system for the future doesn't mean neglecting the needs of today. Systems like Atlas, Delta, Titan and the space shuttle will certainly provide America's primary launch capabilities at least through this decade and into the 21st Century.

In the development of our new strategy, perhaps the most difficult set of decisions concerned the space shuttle program. Less than a decade ago, our space policy envisioned total reliance on the shuttle. But circumstances have changed dramatically since then. Today we rely on expendable rockets for nearly all of our unmanned launch requirements, and that's a sound policy.



President Bush has approved a new National Space Launch Strategy. . . This blueprint for change will bring our space launch capabilities into line with the enormous technological advances of the past two decades. And it will open the highway to space for what the President has termed the "Next American Century."

—Vice President Dan Quayle



I have been a full participant in the development of the National Space Launch Strategy and fully support it. It is a thoughtful plan that lays out important priorities for a new launch system, while still maintaining the inherent capability for shuttle support or production in the event of an orbiter loss or other demonstrable need.

—NASA Administrator Richard Truly



I have been asked whether the new National Space Launch Strategy represents a threat to the future of the space shuttle and the Johnson Space Center in light of the fact that the policy does not include plans for the production of additional orbiters. The short answer is no, there is no threat to shuttle or JSC in the announced strategy.

—JSC Director Aaron Cohen

The space shuttle, with its precious human lives, is just too valuable to use on missions that don't need its unique capabilities. It makes no sense to use shuttle astronauts unless we absolutely have to. In the future we should, and we will, seek to avoid using the shuttle solely as a cargo carrier.

As far as manned spaceflight is concerned, the shuttle will be crucial for some time to come. The space launch policy proposes to extend the life span of the shuttle fleet; to maintain the capacity to produce spare parts; and to operate the system conservatively. But the policy does not envision acquiring new orbiters. Therefore, in all probability, we have purchased the last space shuttle.

The new phase in space launch will also bring an increase in importance of commercial launch. New commercial uses of space will evolve, international competition in space launch will increase, and the relationship between federal government agencies and industry will become more like a partnership.

Just as we build roads to suit commercial traffic, we'll build a launch system that can fit the needs of the private sector. The result will be a better launch industry in America — and a better competitive standing around the world.

More than 30 years ago, our country's leaders made a solemn decision: that America's space program would always lead the world. For the National Space Council, and for our entire space apparatus, yesterday's pledge is today's mission. And our new National Launch Strategy will help ensure that we accomplish our mission. □

Strategy has four elements

[Editor's note: The following is an abridged text of President Bush's new National Space Launch Strategy, developed by the National Space Council.]

The National Space Launch Strategy is composed of four elements:

- Ensuring the existing space launch capabilities, including support facilities, are sufficient to meet U.S. government manned and unmanned space launch needs;
- Developing a new unmanned, but man-rateable, space launch system to greatly improve national launch capability with reductions in operating costs and improvements in launch system reliability, responsiveness, and mission performance;
- Sustaining a vigorous space launch technology program to provide cost effective improvements to current launch systems, and to support development of advanced launch capabilities, complementary to the new launch system; and

require manned presence or other unique shuttle capabilities, or for which use of the shuttle is determined to be important for national security, foreign policy, or other compelling purposes.

Consistent with U.S. national security and national space policy, the U.S. government may seek to recover residual value from ballistic missiles which are, or subsequently become, surplus to the needs of the Department of Defense.

New Space Launch System

The Department of Defense and the National Aeronautics and Space Administration will undertake the joint development of a new space launch system to meet civil and national security needs. The goal of this launch program is to greatly improve national launch capability with reductions in operating costs and improvements in launch system reliability, responsiveness and mission performance.

The new launch system, including manufacturing process and production and launch facilities, will be designed to support a range of medium to heavy-lift performance requirements and to facilitate evolutionary change as requirements evolve. The design may take advantage of existing components from both the space shuttle and existing expendable rockets in order to expedite initial capability and reduce development costs.

The development program will be structured in the near term toward the goal of a first flight in 1999. However, the program should allow for several schedule options for the first flight and should identify key intermediate milestones. Since the new launch system will provide the opportunity for significant long-term benefits to the commercial space launch industry, the agencies should actively explore the potential for U.S. private sector participation. Final decisions on the program schedule, including the date of the first flight, will be made during fiscal year 1993, based on updated requirements and technical and budgetary considerations at that time.

DOD and NASA will plan for the transition of selected space programs from current launch systems to the new launch system at appropriate program milestones to insure mission continuity and to minimize satellite and other transition costs.

Space Launch Technology

Appropriate U.S. government agencies will continue to conduct broadly based research and focused technology programs to support long-term improvements in national space launch capabilities. This technology effort shall address launch system components (e.g., engines, materials, structures, avionics): upper stages; improved launch processing concepts; advanced launch system concepts (e.g., single-stage-to-orbit concepts including the National AeroSpace Plane); and experimental flight vehicle programs.

The Department of Defense, the Department of Energy, and the National Aeronautics and Space Administration will coordinate space launch technology efforts and, by December 1, 1991, jointly prepare a 10-year space launch technology plan.

In addition to addressing government needs, improvement of space launch capabilities can facilitate the ability of the U.S. commercial space launch industry to compete. Consistent with U.S. space policy, U.S. government agencies will actively consider commercial space launch needs and factor them into decisions on existing space launch capabilities, development of a new space launch system, and implementation of space launch technology programs. □

- Actively considering commercial space launch needs and factoring them into decisions on improvements in launch facilities and launch vehicles.

These strategy elements will be implemented within the overall resource and policy guidance provided by the President.

Strategy Guidelines

A mixed fleet comprised of the space shuttle and existing expendable launch vehicles will be the primary U.S. government means to transport people and cargo to and from space through the current decade and will be important components of the nation's launch capability well into the first decade of the 21st Century.

To meet U.S. government needs, agencies will conduct programs to systematically maintain and improve the space shuttle, current U.S. expendable launch vehicle fleets, and supporting launch site facilities and range capabilities.

As the nation is moving toward development of a new space launch system, the production of additional space shuttle orbiters is not planned. The production of spare parts should continue in the near term to support the existing shuttle fleet, and to preserve an option to acquire a replacement orbiter in the event of an orbiter loss or other demonstrable need. By continuing to operate the shuttle conservatively, by taking steps to increase the reliability and lifetime of existing orbiters, and by developing a new launch system, the operational life of the existing orbiter fleet will be extended. The space shuttle will be used only for those important missions that

RICIS inaugurates industrial affiliate program

Move builds on five-year JSC-UHCL cooperative research education effort

Building on the success of a five-year JSC and University of Houston-Clear Lake cooperative research and education program, the Research Institute for Computing and Information Systems is launching a new Industrial Affiliate Program.

As RICIS' first industrial partner in the new program, IBM Federal Systems Division will help define an appropriate role for corporate participation with RICIS and

encourage other companies to join.

"This agreement culminates two years of discussions and preliminary planning," said Glen Houston, RICIS managing director. "Only through such cooperation can the continued technical success of the NASA/Clear Lake area be assured and continue to contribute to the technical accomplishments of the nation as well."

The nationally known research institute was formed in 1986 out of

discussions between UHCL and JSC about the mutual benefits of cooperative research and education programs. RICIS' mission has been the joint definition and management of research and professional education in computer sciences and software engineering for NASA and its contractors.

The new industrial affiliate component will allow private industry and RICIS to interface directly.

"Our program builds on the

strengths of government, academia and private industry to take full advantage of computing and information systems know-how and technology for all participating organizations," explained Dr. E.T. Dickerson, RICIS executive director.

IBM will advise RICIS on industry's role. Kyle Rone, a senior IBM systems engineer, will head a steering committee to define that relationship. The company will offer

credit and non-credit classes in project management, play a role in cooperative research projects and explore other collaborative work.

"We are excited to have this opportunity to take part in the work of RICIS," said Tony Macina, general manager of the IBM Federal Sector Division, Houston. "It not only permits us to avoid expensive duplication, but to forge unique gains in areas important to the national interest."

Bumper stickers promoting space still available

The Exchange Operations Office has a few good bumper stickers, and it would like employees to share them with friends and family members.

The stickers, which read "Space Is Our Future," were developed and printed by the Clear Lake Area Economic Development Foundation in conjunction with local area companies as part of an awareness campaign about the importance of the space program to our national interests, said Teresa Sullivan, Exchange Operations manager.

Earlier this summer, the stickers were distributed to JSC employees and contractors. One JSC employee suggested that the stickers would be a good way to generate support for America's space program and that the extras should be distributed to people who would display them prominently.

The bumper stickers will be distributed to civil service employees on a first-come, first-served basis until the supply of about 600 stickers is exhausted. Interested employees should stop by the Exchange Operations Office in Bldg. 1, Rm. 840, or call x38970.

Station symposium

(Continued from Page 1)

have the potential to improve flight and ground system productivity and reliability, reduce power consumption and weight and prevent technological obsolescence.



JSC Photo by Mark Sowa

HYPERVELOCITY EDUCATION — Teachers Jeri Trablat, center, of Pine Hill, N.J., and Lee Mosty of Irving, Texas, get a close look at the damage a small particle can do when it hits at hypervelocity speeds. They visited with Jay Laughman of Lockheed in JSC's Bldg. 267 hypervelocity impact lab during the 1991 NASA Educational Workshop for Elementary School Teachers. Twenty-three teachers visited JSC July 22 through today for an up-close and personal look at America's space program.

Main engine damaged in ground test

A developmental space shuttle main engine sustained extensive internal damage while it was undergoing ground testing last week at Stennis Space Center.

Senior NASA officials Tuesday gave the go-ahead to proceed toward the Thursday launch of STS-43, saying that the development engine was configured differently from engines used in the shuttle flight program.

"All three of *Atlantis*' main engines have significantly less run time than components on the development engine that experienced the failure," said Shuttle Program Director Bob Crippen, "and the fabrication, inspection and repair histories of these units are well within our experience base for shuttle engines."

Post-test analysis of the development engine pointed to a failure in the high pressure fuel turbine, which had been modified for the test. Shuttle main engines are routinely tested at Stennis Space Center to expand NASA's data base on high time components and to test and certify new or modified components for later use on flight engines.

The test failure occurred about four seconds after engine start when sensors detected abnormal operating conditions. Ground-control systems terminated the test immediately and there was no apparent damage to the test stand on which the engine was mounted.

Investigation of the exact nature and extent of damage to the engine, as well as the cause

of the incident, is continuing.

"Failures such as this do occur from time to time in the aggressive ground-test program that we've always maintained, and especially when we're testing advanced-design components," said Jerry Smelser, manager of the Space Shuttle Main Engine Projects Office at Marshall Space Flight Center. "However, it has been over two years since we've had such an incident and during that time, we've accumulated over 100,000 seconds of engine operation, with 257 engine starts."

Smelser said the engine, number 0215, had been tested extensively in the past. It had been run 15 times prior to the aborted test, with an accumulated run time of about 87.6 minutes.

Mission Control, cafeteria hours established for STS-43

The Mission Control Center viewing room will be open to badged JSC and contractor employees and their families during specified times of STS-43.

Based on a Friday launch, the viewing room will be open from 1-5 p.m. Saturday and Sunday, 11:30 a.m.-2:30 p.m. Monday and Wednesday, 11:30 a.m.-2:30 p.m. and 5-7 p.m. Tuesday, Thursday and next Friday, and 1-5 p.m. next Saturday.

Hours may be altered because of mission operations. Check the Employee Information Service, x36765, for updated hours.

The JSC cafeterias also will have special mission hours. Bldg. 3 will be open from 7 a.m.-4:30 p.m. weekdays, except launch day, and 11 a.m.-4:30 p.m. weekends. Bldg. 11 will be open from 6:30 a.m.-2 p.m. weekdays and 7-10 a.m. weekends.

Atlantis ready to begin nine-day mission

(Continued from Page 1)

launch attempt. The controller was removed Saturday and replaced by Sunday afternoon.

The malfunction was attributed to a bad solder joint connection, and not a generic design problem. This is the first solder joint problem discovered in the history of the program. Each main engine controller has almost 9,000 similar solder joints. This failure was the first in 54,000

field hours and 24,400 factory hours of operation for the controllers.

Awaiting *Atlantis*' launch in the aisle of the Vehicle Assembly Bldg. was *Discovery*, scheduled to be mated to its solid rocket booster and external tank stack by this weekend. The stack is to begin the six hour crawl atop its mobile launch platform to Pad 39A on Aug. 12.

As *Discovery* was transferred to the VAB, *Endeavour* entered the

orbiter processing facility for the first time last week. *Endeavour* will remain in the OPF until processing is completed for its first flight early next year.

Columbia is almost ready for its trip to Rockwell International's Palmdale, Calif., facility, where it will undergo six months of major modifications that will include installation of equipment making the orbiter capable of staying in space up to 16 days.

Agreement with Soviets involves global monitoring

(Continued from Page 1)

the flight project. The manned space flight JWG will work with the existing JWG on Space Biology and Medicine, which will be responsible for implementing the life sciences research.

The agreement also calls for expanded cooperation in the monitoring of the global environment. Both sides will exchange informa-

tion on their respective plans for Earth observations programs and develop cooperation where joint action could improve Earth science research and environmental monitoring on a global scale and facilitate the free and open international exchange of data from those programs. This cooperation will be carried out by the U.S./U.S.S.R. Earth Sciences JWG.

It was also agreed to hold annual meetings between the two governments on civil space issues and cooperative activities.

The JWGs are coordinated on the U.S. side by NASA and the Department of State-led "Inter-agency Working Group on U.S./Soviet Space Cooperation," under the guidance of the National Space Council.

Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

Swap shop ads are accepted from current and retired NASA civil service and on-site contractor employees. Each ad must be submitted on a separate fill-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads will be printed only once; repeats will be discarded. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2.

Editor Kelly Humphries

Associate Editors Pam Alloway
Kari Fluegel

Hubble gyroscope replacements ready for service mission

(Continued from Page 1)

A spare gyro was activated to provide another level of redundancy within the control system. Hubble now has four gyros in use; any three can maintain the observatory's attitude.

In the event of additional, multiple gyro failures, Hubble could activate its retrieval mode gyro package, used to place the telescope into various safemodes and/or prepare it for a shuttle servicing mission.

Hubble is designed to be fully serviceable on orbit. Replacement gyros are available and ready for the planned servicing mission. The first servicing mission, tentatively scheduled for late 1993, will replace at least one of the gyro assemblies (two gyros compose an assembly).